

ABSTRACT

[0076] Systems and methods for determining tissue contact and penetration depth are provided. In one aspect, the system includes a needle and a pressure measurement assembly. The needle, in one exemplary embodiment, includes a first end and a second end with at least one aperture located a predetermined distance from the first end. The fluid pressure measurement assembly is connected with a portion of the needle to measure pressure of fluid dispensed in the needle. The fluid pressure measurement assembly measures a first pressure of the fluid, a second pressure when the needle contacts tissue and a third pressure when the needle penetrates the tissue and the aperture becomes occluded.